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Indian Standard

SPECIFICATION FOR SELF-INDICATING AND SEMI-SELF-INDICATING COUNTER TYPE WEIGHING MACHINES

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UDC 681·268

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December 1961

Indian Standard

SPECIFICATION FOR SELF-INDICATING AND SEMI-SELF-INDICATING COUNTER TYPE WEIGHING MACHINES

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 25 September 1961, after the draft finalized by the Commercial Weights & Measures Sectional Committee had been approved by the Engineering Division Council.

0.2 This Standard is one of a series of Indian Standards on commercial weighing machines, being prepared at the instance of the Standing Metric Committee, Government of India, in connection with the introduction of metric system of weights and measures in the country. Other standards issued in the series are:

IS:1432-1959 GENERAL REQUIREMENTS FOR WEIGHING INSTRUMENTS
*IS:1433-1960 SPECIFICATION FOR BEAM SCALES
IS:1434-1959 SPECIFICATION FOR COUNTER MACHINES
IS:1435-1960 SPECIFICATION FOR PLATFORM WEIGHING MACHINES
IS:1436-1960 SPECIFICATION FOR WEIGH-BRIDGES
IS:1438-1960 SPECIFICATION FOR CRANE WEIGHING MACHINES
IS:1439-1959 SPECIFICATION FOR STEELYARDS
*IS:1702-1960 SPECIFICATION FOR SPRING BALANCES
*IS:1854-1961 SPECIFICATION FOR PERSON WEIGHING MACHINES

0.3 In determining the limits for greatest error, due consideration was given to the views of manufacturers and testing organizations, prevalent rules and regulations pertaining to weights and measures in India and the practices current in several metric countries. It is to be pointed out that the values for maximum error specified in this standard (*see* Table I) are for new machines only.

0.4 Wherever a reference to any Indian Standard appears in this specification, it shall be taken as a reference to the latest version of the standard.

0.5 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS : 2-1960 Rules for Rounding Off Numerical Values (*Revised*). The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

0.6 This standard is intended chiefly to cover the technical provisions relating to self-indicating and semi-self-indicating counter type weighing machines, and it does not include all the necessary provisions of a contract.

1. SCOPE

1.1 This standard covers the requirements of self-indicating and semi-self-indicating counter type weighing machines.

NOTE — This standard does not include spring balances included in *IS: 1702-1960 Specification for Spring Balances, and platform weighing machines covered in IS: 1435-1960 Specification for Platform Weighing Machines.

2. TERMINOLOGY

2.0 For the purpose of this standard, the following definitions shall apply.

2.1 Self-Indicating Machine — A machine which, on the application of the load to be weighed, indicates the whole weight of the load automatically. A typical self-indicating machine is illustrated in Fig. 1.

2.2 Semi-Self-Indicating Machine — A machine which, on the application of the load to be weighed, indicates automatically only a portion of the weight of the whole load; leaving the remainder to be balanced by weights or sliding poises fitted to the tare or capacity bars, or by any other suitable means. A typical semi-self-indicating machine is illustrated in Fig. 2.

3. CAPACITIES

3.1 The self-indicating or semi-self-indicating machines shall be of the capacities as shown in Table I.

4. GENERAL REQUIREMENTS

4.1 The machines shall comply with the general requirements specified in IS : 1432-1959 General Requirements for Weighing Instruments. In addition, they shall comply with the requirements in **4.2** to **4.8**.

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*Since revised.

*Since revised.

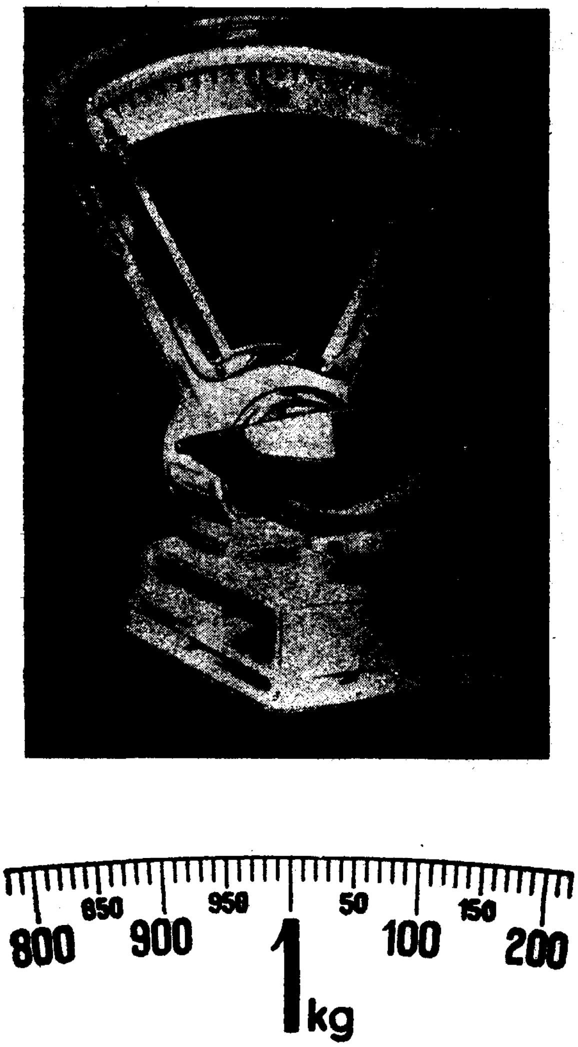

FIG. 1 SELF-INDICATING MACHINE

4.2 The self-indicating or semi-self-indicating machines are generally constructed by incorporating a beam or levers coupled to a pendulum or other type of resistance system, so as to produce an indicating arrangement for the machine. The arrangement of the lever system of the machine shall be such that the horizontality of the goods and weight pan fittings throughout the movement of the beam is preserved. The machine shall be provided with dashpot or any other suitable arrangement so as to bring the pointer quickly to rest.

4.3 The supports for the pans shall be of a suitable rigid structure. The pans shall be made of mild steel, stainless steel, brass or bronze, aluminium or its alloys, porcelain, enamel coated steel, glass or plastic material.

4.4 The bearing surfaces, knife edges and points of contact of all stays, hooks and loops shall be of hard steel or agate. The knife edges and bearings shall be so fitted as to allow the beam to move freely and the knife edges shall practically bear upon the whole length of their working parts. All levers and resistance mechanism shall be enclosed as far as possible.

4.5 The machines shall have a balance box for minor adjustments. The balance box shall be permanently fixed, preferably beneath the weight pan, and shall be large enough to contain loose material to an amount up to one percent of the capacity of the machine. No other adjusting contrivance shall be used. In case of self-indicating machines, the balance box shall be fixed below the goods pan.

4.6 The chart of the machines shall be graduated into reasonably equal parts and the width apart of the graduations shall be not less than 1·5 mm (unless magnification is provided on the chart) for a capacity of 10 kg and under, and not less than 2 mm for a capacity above 10 kg. The weights corresponding to one-half the interval between consecutive graduation marks shall not exceed the greatest error allowed as shown in Table I. The extremity of the pointer shall not exceed one

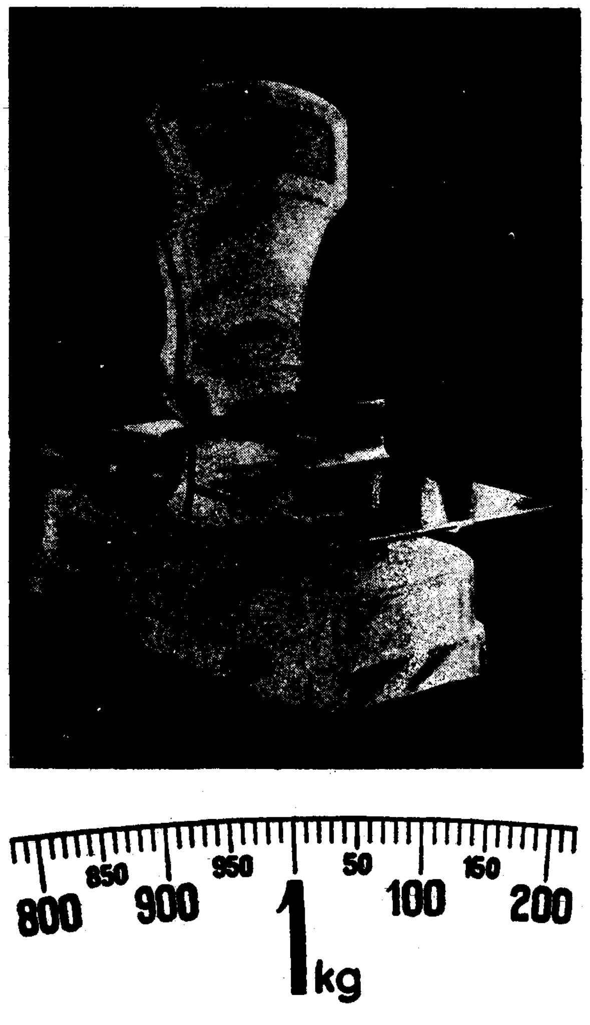

FIG. 2 SEMI-SELF-INDICATING MACHINE

millimetre in width and shall not be more than 3 mm away from the chart. The position of the index when there is no load shall be clearly indicated by a zero mark.

4.6.1 The value of the smallest division on the chart shall be such that it corresponds to one of the weights in the series 1, 2, 5 or its decimal multiples.

4.7 The self-indicating and semi-self-indicating machines excepting out-of-level scales shall be provided with levelling screws and a circular bubble.

4.8 When tare bars are graduated, they shall only be permitted providing the chart capacity and the total capacity (chart plus tare bar) comply with capacities shown in Table I.

NOTE — When tare bars are used and are not graduated except with a zero mark, they shall not be taken into account when calculating the capacity of the machine. Ungraduated tare bars shall be marked with zero.

5. TESTS

5.1 All self-indicating and semi-self-indicating machines shall be tested on a horizontal level plane.

5.2 The machines shall be tested throughout the full range of their capacity by progressively increasing the load, the permissible error shall not exceed the limits specified in col 3 of Table I.

5.3 When the pans are loaded to half the capacity, no appreciable difference in the accuracy of the machine shall result by moving the load anywhere within a distance from centre equal to one-third from the greatest length of the pan.

5.4 When the goods pan is in the form of a scoop, the machine shall be correct to the prescribed limits of error if half the full load is placed against the middle of the back of the scoop and the other half in any position on the scoop.

5.5 Self-indicating and semi-self-indicating machines shall not be tested for sensitiveness.

6. SEALING

6.1 Each machine shall be provided with a plug or stud of soft metal on a conspicuous part of the beam or body for receiving a seal. Such a plug or stud shall be made irremovable by undercutting it or by some other suitable manner.

TABLE I LIMITS FOR GREATEST ERROR FOR SELF-INDICATING AND SEMI-SELF-INDICATING COUNTER TYPE WEIGHING MACHINES

(*Clauses* 0.3, 3.1, 4.6, 4.8 *and* 5.2)

SELF-INDICATING MACHINES			SEMI-SELF-INDICATING MACHINES		
Capacity	Maximum Value of the Minor Graduation	Permissible Greatest Error in Excess or Deficiency when Fully Loaded	Capacity	Maximum Value of the Minor Graduation	Permissible Greatest Error in Excess or Deficiency when Fully Loaded
	g	g		g	g
100 kg	200	100	100 kg	100	50
50 kg	100	50	50 kg	40	20
30 kg	100	50	30 kg	30	15
20 kg	100	50	20 kg	20	10
10 kg	50	25	10 kg	10	5
5 kg	20	10	5 kg	10	5
3 kg	10	5	3 kg	10	5
2 kg	10	5	2 kg	10	5
1 kg	10	5	1 kg	10	5
500 g	5	2·5	500 g	4	2
200 g	2	1·0	200 g	2	1·0
100 g	1	0·5	100 g	1	0·5

NOTE — The maximum error shall not exceed the value of half the minor division indicated on the chart.

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